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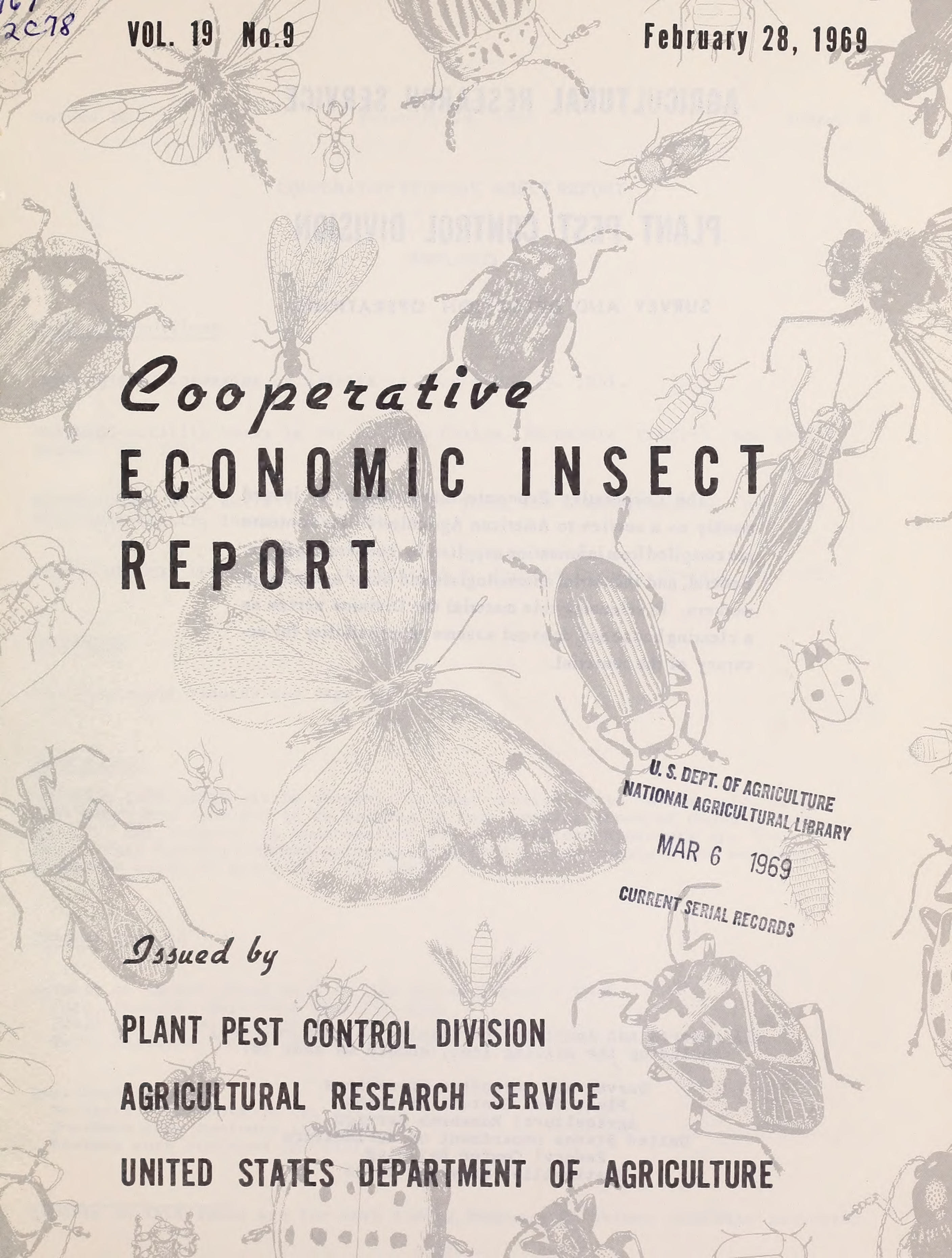

Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Hyattsville, Maryland 20782

Volume 19 February 28, 1969 Number 9

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM appearing on alfalfa in Nebraska. (p. 125).

GREENBUG activity heavy in the Rolling Plains, Panhandle, Central, and South Texas. (p. 125).

WINTER GRAIN MITE activity decreasing in Young and Archer Counties, heavy in Wilbarger County, Texas. (p. 125).

Adults of PEAR PSYLLA active in orchards in Jackson County, Oregon. (p. 126).

Detection

For new county records see page 129.

Predictions

EUROPEAN CORN BORER may be economic in east-central South Dakota. (p. 130). CORN ROOTWORMS expected to be problem in corn-growing areas of South Dakota (p. 133) and economic in southeastern and southwestern Minnesota (p. 135). Severe PALE WESTERN CUTWORM outbreak predicted in southwestern and southern panhandle areas of Nebraska. (p. 139).

Special Reports

Summary of Insect Conditions in the United States - 1968
  Corn, Sorghum, Sugarcane (pp. 130-139).
  Small Grains (pp. 139-142).
  Turf, Pastures, Rangeland (pp. 142-144).

Distribution maps
  Northern corn rootworm (p. 134).
  Southern corn rootworm (p. 136).
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WEATHER OF THE WEEK ENDING FEBRUARY 25

HIGHLIGHTS: Major storms pounded the Far West and the Northeast. Bitter cold weather continued in Montana while a warming trend occurred in the East.

PRECIPITATION: Copious rains soaked central and southern California early in the week with snow in the mountains. The huge storm spread eastward piling heavy snow in the mountains of Arizona above 4,000 feet while showers and thunderstorms occurred in the valleys. By Wednesday evening 15 inches of snow covered the ground in the Flagstaff vicinity. Heavy snow also fell in the central and southern Rockies with lighter snow in the northern Rockies and nearby Great Plains. Heavy rain and snow in the Far West continued over the weekend. The snow pack increased to 16 feet in the Sierras and exceeded 20 feet in the Cascades. The blowing and drifting snow clogged some of the major highways in California on Monday, February 24. In the Far Northwest, light precipitation, rain in the lower levels, and snow in the mountains fell early and late in the week. Totals were generally less than 1 inch. The storm which dumped 1 to 1.5 feet of snow over western North Carolina on February 15 and 16 moved far out into the Atlantic Ocean, stalled about 600 miles east of the Virginia coast, and continued to furnish rain, freezing rain, freezing drizzle, and snow to the Middle Atlantic States and Northeast. One to 3 inches of snow fell from Washington, D.C., to New York City on Thursday morning. Snow fell Sunday and Monday in the Northeast and by Tuesday morning, February 25, had covered parts of New England with a foot or more of new snow. Eastern Texas and nearby parts of Arkansas and Louisiana received generous rains starting after midweek.

Weather continued on page 129.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEBRASKA - Averaged 2-5 per alfalfa crown in 2 fields in Keith and Lincoln Counties February 5-6. (Andersen).

CORN LEAF APHID (Rhopalosiphum maidis) - FLORIDA - Light on 18 to 24-inch sorghum, up to 10 per leaf, at Homestead, Dade County. Collected by D.O. Wolfenbarger. Determined by R.J. Nielsson. (Fla. Coop. Sur., Feb. 11).

GREENBUG (Schizaphis graminum) - TEXAS - Populations during week of February 3-7 by county as follows: Floyd - heavy over entire county; Crosby - medium to heavy; Dawson - spotted, heavy; Lynn - light to medium. Cold weather prevented additional buildup in the panhandle. Currently medium to heavy in Briscoe County; some control in progress. (Almand). Heavy in Motley, Foard, Wilbarger, Wichita, Cottle, King, and Knox Counties. Damage light in some fields in Jones and Young Counties. (Boring). Very spotted populations reported from central area. Heavy in small grain along the Brazos River bottom in Falls County near Marlin. Controls applied. (Turney, Wood). Heavy and widespread in Uvalde County. Counts 100+ per row foot in irrigated wheat 6-7 inches high. One field sprayed. (Tapscott). ARKANSAS - Negative in wheat in northeast and southeast areas. (Ark. Ins. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - MISSOURI - Total of 100 girdled stalks from field in Butler County dissected. Live larvae in 4 stalks; dead larvae in 21 stalks; empty tunnels in 75 stalks. (Munson).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Heavy in Wilbarger County. Damage decreasing in Young and Archer Counties. (Texas Coop. Rpt.).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - ARKANSAS - Ranged 12-15 per square foot in southwest area; counts higher than in northern area. (Ark. Ins. Sur.).

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - No egg hatch detected in alfalfa in Miller County. (Ark. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - CALIFORNIA - Light larval populations appearing on 20 acres of alfalfa in Clovis, Fresno County. (Cal. Coop. Rpt.).

GENERAL VEGETABLES

GREEN PEACH APHID (Myzus persicae) - FLORIDA - Light, up to 2 per leaf on tomato and up to 4 per leaf on potato at Homestead, Dade County; colonies forming. Determined by R.J. Nielsson. (Nielsson, Wolfenbarger, Feb. 11).

DECIDUOUS FRUITS AND NUTS

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - Overwintering females began egg laying on peach trees in Gainesville area, Alachua County, February 5; compares to February 2 in 1967, and February 3 in 1968. Most female scales gravid. No nymphs observed February 19. No eggs or nymphs observed on peach trees in Monticello area, Jefferson County, February 20. (Whitcomb).

PEAR PSYLLA (*Psylla pyricola*) - OREGON - Overwintering adults active in orchards in Willamette Valley. No oviposition observed, one female with fully developed eggs. (Every). In Medford area of Jackson County, adults up to 5 per trap, mostly 1-2 per trap. Higher than normal percentage of females with eggs. No oviposition observed. Highest temperature 55°F. (Berry).

CITRUS

Citrus Insect Situation in Florida - Mid-February - CITRUS RUST MITE (*Phyllocoptruta oleivora*) infested 69 (norm 61) percent of groves; 48 (norm 42) percent economic. Population above normal and in high range. Further increase expected. Infestations similar on leaves and fruit. Highest districts south, west, north, and east. TEXAS CITRUS MITE (*Eutetranychus banksi*) infested 27 (norm 31) percent of groves; 15 (norm 11) percent economic. Population increased slightly but still in low range and about normal. Additional increase and few heavy infestations expected. Highest districts central and north. CITRUS RED MITE (*Panonychus citri*) infested 27 (norm 36) percent of groves; 9 (norm 18) percent economic. Population decreased and expected to remain below normal and near current low level. Highest district east. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) infested 6 percent of groves; none economic. Slight increase expected. GLOVER SCALE (*Lepidosaphes gloverii*) infested 70 (norm 78) percent of groves; 4 percent (norm 17 percent) economic. PURPLE SCALE (*L. beckii*) infested 51 (norm 73) percent of groves; less than 1 percent economic (norm 13 percent). BLACK SCALE (*Saissetia oleae*) infested 23 (norm 36) percent of groves; 3 (norm 15) percent economic. YELLOW SCALE (*Aonidiella citrina*) infested 66 (norm 62) percent of groves; 4 (norm 15) percent economic. CHAFF SCALE (*Parlatoria pergandii*) infested 40 (norm 64) percent of groves; less than 1 percent economic (norm 9 percent). All scales below normal for February. All in low to moderate range in all districts and not expected to increase within next month. Slight increase indicated for Glover and yellow scale. An ARMORED SCALE (*Unaspis citri*) continues present in 16 percent of groves but temporarily inactive. APHIDS expected to be less numerous than normal until mid-March, then increase rapidly. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

ORNAMENTALS

BLACK VINE WEEVIL (*Brachyrhinus sulcatus*) - OREGON - Severe on two large beds of ornamental maple rootstock in Portland, Multnomah County. Trees in small pots; grubs averaged 4-5 per pot. (Larson, Wescott).

A NOCTUID MOTH (*Orthosia hibisci*) - MARYLAND - Larvae lightly damaged rose buds at University Park and Greenbelt in Prince Georges County in May 1968. Collected by T.L. Bissell. Determined by D.M. Weisman. This is a new county record. (U. Md., Ent. Dept.).

FORBES SCALE (*Aspidiotus forbesi*) - FLORIDA - Found on dogwood, *Cornus florida*, at Williston, Levy County, February 7, 1969. Collected by A.E. Graham. This is new Florida Department of Plant Industry county and host record. (Fla. Coop. Sur.).

AN ARMORED SCALE (*Diaspis boisduvalii*) - CALIFORNIA - Heavy on orchid plants in nursery in Fillmore, Ventura County. (Cal. Coop. Rpt.).

A SPIDER MITE (*Eotetranychus libocedri*) - CALIFORNIA - Medium on Italian cypress trees in Palm Springs, Riverside County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

AN ARMORED SCALE (*Lindingaspis rossi*) - CALIFORNIA - Medium on redwood trees, *Sequoia* sp., locally in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - Total of 2 cases reported in Bee County, TEXAS, February 16-22. Total of 122 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 39, Chihuahua 13, Coahuila 10, Nuevo Leon 7, Tamaulipas 53. Total of 15 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 25,768,000; Mexico 33,300,000. (Anim. Health Div.).

CATTLE LICE - NEBRASKA - *Bovicola bovis* (cattle biting louse) light on 12 animals at 1 site in Lancaster County. *Haematopinus eurysternus* (short-nosed cattle louse) light on 3 herds: 15 head in Gage, 12 in Lancaster, and 10 in Cass Counties. (Campbell, Feb. 12). OKLAHOMA - Mostly *H. eurysternus* heavy on cattle in Mayes and Pushmataha Counties. (Okla. Coop. Sur.). ALABAMA - Biting and sucking lice more widespread on poorly protected cattle in Shelby, Lee, Bibb, and other counties. Populations less serious than in most years. Some herds and individual animals being treated. (Odom et al.).

LONE STAR TICK (*Amblyomma americanum*) - OKLAHOMA - Reported on cattle in Pushmataha County. (Okla. Coop. Sur.).

STORED PRODUCTS

INDIAN-MEAL MOTH (*Plodia interpunctella*) - IOWA - Infested shelled corn at Winterset, Madison County. (Iowa Ins. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (*Anthonomus grandis*) - TEXAS - Weekly checks made of 225 traps in control zone during January. One weevil trapped in Garza County week ending January 25; in Stonewall County, 17 weevils taken in one trap same week. In High Plains area, 13 weevils (5 males, 8 females) taken on pheromone stickyboard traps between December 11, 1968, and January 11, 1969. Captures occurred during last half of December. (PPC South. Reg.).

BROWN-TAIL MOTH (*Nygmia phaeorrhoea*) - MAINE - To date, single webs found at several locations in Portland area. This area contiguous to more heavily infested area at Falmouth. Approximately 61,800 acres surveyed by end of January. NEW HAMPSHIRE - Single web found at old infestation site in Henniker. Approximately 43,200 acres surveyed in State to January 31. (PPC East. Reg.).

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - TEXAS - Surveys in Bee, Cameron, Dimmit, La Salle, Live Oak, Maverick, Nueces, Webb, Zapata, and Zavala Counties negative. (PPC South. Reg., Dec. Rpt.).

GYPSY MOTH (*Porthetria dispar*) - NEW JERSEY - Three areas of infestation near defoliation level found in Monmouth County. These in section of county where treatments made. About 100 acres involved at each site. Egg masses located at 3 sites in nonregulated areas of Hopewell Township, Mercer County. Two sites 0.5 mile apart and 0.5 mile south of positive trap; third site 1 mile southwest of these sites. PENNSYLVANIA - Infestations found at 3 trap sites in Luzerne County, 1 in Susquehanna County. One egg cluster found along Appalachian Trail about 4 miles west of Auburn infestation; 1 egg mass found in Greenwich Township, Berks County, near Lehigh County line and on edge of regulated area. Three egg clusters found in sterile release block in Bucks County. (PPC East. Reg., Jan. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - CALIFORNIA - A sterile *A. ludens* trapped in San Diego 12 miles north of release points in Tijuana, Baja California, Mexico. Six weeks since last fly trapped and latest date that a sterile *A. ludens* trapped after termination of releases. Releases terminated at Tijuana, November 27, 1968. (Cal. Coop. Rpt.).

WINTER MOTH (*Operophtera brumata*) - MAINE - All catches in blacklight traps and stocking-type traps negative for this pest. (PPC East. Reg., Jan. Rpt.).

HAWAII INSECT REPORT

Turf and Pasture - A GRASS WEBWORM (*Herpetogramma licarsisalis*) subsided in lawns and pastures throughout State. Damage light in scattered areas on Oahu, Kauai, and Hawaii. Damage light to medium on Maui, mostly pastures in northeastern sections. (Yoshioka, Miyahira, et al.).

General Vegetables - SOUTHERN GREEN STINK BUG (*Nezara viridula*) nymphs and adults light to medium on small yard-long bean plantings at Ewa and 0.25-acre planting at Koko Head, Oahu. Negligible on snap and yard-long beans in Waianae and Waimanalo. SWEETPOTATO HORNWORM (*Agrius cingulatus*) larvae and damage heavy in sweetpotato planting at Maalaea, Maui. (Miyahira).

Fruits - MANGO FLOWER BEETLE (*Protaetia fusca*) adults medium on mango blossoms in Waimanalo and Waianae, Oahu. Adults common on mango as most trees in flower. LARGE MANGO TIP BORER (*Bombotelia jocosatrix*) larvae and damage negligible to trace on mango foliage in Ewa, Makaha, Honolulu, Kaneohe, and Kahuku, Oahu. Light on terminals of several trees in Waimanalo. (Funasaki).

Forest - A CONIFER APHID (*Cinara carolina*) nymphs and adults light and widespread in 200 acres of slash pine (*Pinus elliotii*) at Makaha and Kokee in Waimea District, Kauai. (Sugawa). RED WAX SCALE (*Ceroplastes rubens*) heavy on small volunteer ohia-lehua trees (*Metrosideros collina polymorpha*) at Makaha and Kokee, Waimea District, Kauai. As many as 26 per leaf; 90 percent of leaves infested. (Sugawa).

Miscellaneous Insects - VAGRANT GRASSHOPPER (*Schistocerca vaga*) buildup heavy near airport in Waianae District, Oahu, in areas with dense growth of slender mimosa (*Desmanthus virgatus*). Flushed from crops in Waianae during spray or harvesting operations but no damage reported. (Nakao).

INSECT DETECTION

New County Records

A NOCTUID MOTH (*Orthosia hibisci*) - MARYLAND - Prince Georges County. (p. 126).

FORBES SCALE (*Aspidiotus forbesi*) - FLORIDA - Levy County. (p. 126).

CORRECTIONS

CEIR 19(7):103 - WHITE-FRINGED BEETLES - In line 4, delete OKLAHOMA. Sentence should read: Local spread occurred in that State, as well as in ALABAMA, FLORIDA, and GEORGIA.

CEIR 19(8):120 - Line 19 - Spodoptera exigua should read Spodoptera *frugiperda*.

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 2/14-20, BL - Armyworm (*Pseudaletia unipuncta*) 1, black cutworm (*Agrotis ipsilon*) 5, granulate cutworm (*Feltia subterranea*) 9.

Weather of the week continued from page 124.

TEMPERATURE: Temperatures averaged a few degrees below normal over most of the Far West and across the South, much below normal in Montana, and above normal from the northern Great Plains to the Northeast. Mild, sunny, pleasant weather prevailed from the northern Great Plains to New England and as far south as the Ohio River. The warm weather melted some of the snow in the Dakotas, Minnesota, Wisconsin, and southward where the ground was not frozen. The water from the snow percolated into the ground with little runoff. By the end of the week, most of the snow in Kentucky and Tennessee had melted. Melting snow in Washington also percolated into the ground with little runoff. However, deep snow still covered the foothills and mountains in that State. Gradual warming over the East brought weekly temperatures above normal in the Northeast and closer to normal over the Southeast during the previous week. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1968

(Continued from page 122)

CORN, SORGHUM, SUGARCANE

Highlights:

EUROPEAN CORN BORER was generally more abundant in the fall of 1968. Populations increased in 9 major corn-growing States. SOUTHWESTERN CORN BORER was serious on corn in northern Alabama, increased in southern Illinois, and damaged corn in several areas of Oklahoma. FALL ARMYWORM was economic on corn and sorghum in Texas and a threat to corn throughout the year in Florida. WESTERN BEAN CUTWORM damaged corn in northeastern Colorado and was heavy in southwestern Nebraska. LESSER CORNSTALK BORER was severe on late field corn and moderate on sugarcane in Florida. CORN ROOTWORMS were damaging in several States and required controls in some areas. Fall populations were sufficiently high in the corn-growing area of South Dakota so that problems are expected in 1969. SORGHUM MIDGE was heavy on sorghum in areas of Texas and caused some heavy damage in Oklahoma.

EUROPEAN CORN BORER (*Ostrinia nubilalis*) infestations ranged 12-100 percent in a 10-square-mile area in the Prospect Valley area of Weld County, COLORADO. Counts were slightly higher on corn in 1968 than in 1967 in northeastern KANSAS. Infestations ranged 4-15 percent on some sorghum in the southeastern and east-central areas in the fall of 1968. Winter survival was less than 6 percent in Hall and Cuming Counties, NEBRASKA. Borers averaged about 500 per acre with less than 33 percent pupation in the last half of May. Flights peaked June 9-11. High counts occurred in Cuming County with an average of 1,132 borers per acre on 16 percent of the corn. During fall counts increased to 27,306 per acre on 81.6 percent of the corn. In Hall County borers averaged 18,648 per acre on 69.2 percent of the corn. These figures are near or slightly above normal. Winter survival in SOUTH DAKOTA averaged 80-100 percent in 5 southeastern counties the first week of May. First adults were taken in a light trap at Brookings, Brookings County, on June 28, the same date as in 1967, which is 2 weeks later than normal. Total damage was light in the southeastern area. Damage was not light in Union County or in the far northeastern counties. Borer numbers and damage increased in 1968 and may become economic in 1969 in the east-central counties. Winter survival in NORTH DAKOTA was 81 percent, slightly more than in 1967. By mid-June, however, fewer pupae were present than in 1967. First moths appeared in light traps June 17. On July 19, first instars were present. By the end of August first-generation borers were full grown. In September, second-generation borers did not appear in economic numbers and did not develop sufficiently to overwinter. The fall survey in 5 southeastern North Dakota counties revealed 112 borers per 100 plants on 40 percent of the corn compared with 101 per 100 plants on 49 percent of the corn in 1967. Very little stalk breakage was evident.

Although European corn borer increased in southern, central, and east-central MINNESOTA, counts were not high. Counts decreased in the northwestern district but remained at the high level of 99 borers per 100 plants. Counts in the west-central district remained moderate with 58 borers per 100 plants. Economic damage to field corn was restricted mostly to the northwestern district. The outlook for 1969 in Minnesota is much the same as it was in 1968. European corn borer winter survival in IOWA was 86 percent, slightly more than in 1967. During mid-May moths appeared in a light trap at Ames, Story County. During late July an average of 19.2 borers per 100 plants infested 15.7 percent of the corn. By October, borers averaged 171 per 100 plants on 72 percent of the corn compared with 55 per 100 plants on 53 percent in 1967. Loss was estimated at 46.3 million bushels. The first moth of the season in MISSOURI was trapped May 10 at Portageville, New Madrid County. First-generation counts were low. Fall overwintering populations in all districts were higher than in 1967. In ARKANSAS heavier populations (2,448 borers per acre) than in 1967 infested 25 percent of the stalks. Numbers in northern ALABAMA on corn and grain sorghum were much lower than during 1960-1966. European corn borer was reported for the first time in Baldwin County, about 180 miles south of any previously known infestation in the State. Larvae were heavy in field corn in central TENNESSEE. Infestation was 98 percent in some instances.

European corn borer averaged 4.6 first-generation borers per 100 stalks (8 borers in 1967) in 22 counties surveyed in ILLINOIS. Second-generation borers were the highest since 1955 with a State average of 211 per 100 stalks. Counts for the 36 counties surveyed since 1942 averaged 205 borers per 100 stalks (61 in 1967). The highest averages were 282 borers per 100 plants in the southwestern district and 540 borers per 100 stalks in Livingston County. Winter survival in WISCONSIN was about 76 percent. By May 31 moth emergence was underway. By June 21 leaf feeding ranged 1-10 percent. Adults began to appear by July 26. Second-generation borers were numerous in field and sweet corn in all areas. All larval stages were common into October. Adults were caught in blacklight traps until after October 4. European corn borer was not a threat to field corn in MICHIGAN. Damage was well below the control level. First-generation infestations throughout INDIANA were scarce due to the lateness of corn. Second-generation infestations were the heaviest since 1957. Counts averaged 82 per 100 plants on 50 percent of the corn in the State. The most heavily infested fields had from 7 to 13 borers per stalk, with up to 20 percent ear droppage. Drying conditions, which allowed corn to be harvested by early November, minimized stalk breakage. Pupation had begun by late May in most areas of OHIO. By late June damaged corn was evident. The first generation generally remained below the control level. Large numbers of moths appeared in blacklight traps during early August. During the last half of August second-generation borers were heavy and widespread. The fall survey in Ohio revealed an average of 152.6 borers per 100 plants compared with 18.4 per 100 plants in 1967 and 41.5 in 1966. Loss to the corn crop was estimated at 7,745,732 bushels.

European corn borer infested up to 80 percent of some corn stands in the mountain and northern areas of VIRGINIA. The first major flights in MARYLAND occurred in mid-May on the Eastern Shore. Heavy flights started again in late July and continued into September. With exceptionally heavy numbers statewide, controls were applied to most of the State's 24,000 acres of sweet corn but to very little field corn. Heavily infested fields in the southern and Eastern Shore areas of Maryland had 18-21 borers per stalk in September. Overwintering populations are more than twice those of 1967. In DELAWARE populations during fall were the highest ever recorded. The State average of 444 borers per 100 corn plants was more than twice that of 1967. The first generation in PENNSYLVANIA was about twice that of 1967. In late June about 75 percent of the corn in some fields had feeding holes. Larval numbers approached but did not reach the injury threshold level. The fall average, 98 borers per 100 plants, was above the 20-year average for the State. Larvae infested corn during the first week of June in RHODE ISLAND. In NEW HAMPSHIRE a cool, wet June extended egg laying well into July. During early August pupation was rapid. The second generation was about the same as in 1967. In VERMONT 21.38 larvae per 100 corn plants infested an average of 15.75 percent of the plants in 13 of 14 counties. Counts were higher than the 1967 level of infestation. Grand Isle, Chittenden, Windsor, and Franklin Counties were the most heavily infested. For the status of European corn borer in the fall of 1968 see CEIR 19(4):47-53.

SOUTHWESTERN CORN BORER (Diatraea grandiosella) was serious on corn in northwestern and north-central ALABAMA. New records were reported for 4 northeastern counties. Infested counties now total 38. Populations increased in extreme southern ILLINOIS. Larvae averaged 50 per 100 stalks in one late-planted field. In the most heavily infested area, Pulaski and Alexander Counties had an average of 22 percent of plants infested. A new record was reported for one southeastern county. In MISSOURI populations during fall were similar to those for 1967. New records were reported in 2 southeastern counties. Percent lodging in ARKANSAS was comparable to 1967, but percent of infestation was heavier for early corn. In TEXAS infestations in corn were heaviest in 4 southern panhandle counties. Southwestern corn borer damaged corn in a few northwestern, east-central, and southeastern OKLAHOMA counties during October. By November 1, diapause in the east-central area was complete. This pest was reported for the first time in one north-central county. Infestations in south-central KANSAS ranged 5-12 percent for the first generation and 25-50 percent for the second generation. First-generation moths first appeared July 27. In the fall infestations in southeastern and south-central Kansas ranged 5-70 percent. In ARIZONA southwestern corn borer was moderate in sorghum in 2 southwestern counties from June through September. From August through November the heaviest infestation for many years occurred on corn and sorghum in Maricopa County.

SUGARCANE BORER (*Diatraea saccharalis*) was light on corn during early June in Cameron County, TEXAS, but was heavy and damaged grain sorghum in the Rio Grande Valley. In mid-August medium numbers were widespread on grain sorghum in Calhoun County where damage ranged up to 25 percent in some fields. During September this pest infested late-planted grain sorghum in 2 southwestern counties. Sugarcane borer continued as the principal pest of sugarcane in FLORIDA during 1968.

FALL ARMYWORM (*Spodoptera frugiperda*) larvae damaged corn in Imperial County, CALIFORNIA. Populations were light on late-planted field and sweet corn in eastern NEBRASKA in August and September. A very light flight was followed by unusually light infestations on corn and sorghum in KANSAS. This pest was not very common in OKLAHOMA and caused little damage. In TEXAS damage was economic to corn and grain sorghum, but numbers in ARKANSAS were much lighter in 1968 than in 1967. Fall armyworm was light and scattered on late corn and sorghum throughout ALABAMA. Fall armyworm and *Heliothis zea* (corn earworm) larvae were a threat to corn throughout 1968 in the Everglades area of Palm Beach County, FLORIDA. During spring *S. frugiperda* accounted for 94 percent of the budworms and 62 percent of the larvae in ears of sweet corn. One or both species infested 95 percent of the leaves and stalks and 94.5 percent of the ears in untreated checks. Fall armyworm was the major species that damaged 79 percent of the stalks. A mixed population of these 2 species infested the buds of field corn and damaged 23-43 percent of the stalks. Fall armyworm was heavy and severely damaged some corn during June and some grain sorghum during August in the Sanford area, Seminole County. Treatments were required on grain sorghum. Most spring corn received 1-3 applications.

SORGHUM WEBWORM (*Celama sorghiella*) damage to grain sorghum was noneconomic in ALABAMA, but the pest necessitated treatment of some fields in ARKANSAS. Light numbers damaged some grain sorghum in 6 east-central counties of TEXAS. Sorghum webworm was active from mid-August to early October in OKLAHOMA, with up to 150 per head in several south-central counties. Counts ranged up to 65 per head in some grain sorghum in the north-central, northeastern, central, east-central, and southwestern areas. Larvae damaged a few late sorghum fields in east-central and southeastern KANSAS in September.

WESTERN BEAN CUTWORM (*Loxagrotis albicosta*) increased in northeastern COLORADO where loss to corn ranged light to moderate. This cutworm was reported for the first time from 22 NEBRASKA counties and is now known to occur in 47 counties in the State. Flights peaked July 16-21 in the central and southwestern areas. The heaviest infestations were concentrated in the southwestern district and from Ogallala to Central City along the Platte River Valley. Spotted heavy infestations occurred in the panhandle area along or near the North Platte River. By mid-September most larvae had pupated. Larval numbers increased considerably in Dawson County but decreased in Lincoln County. Statewide populations appeared to remain at or increase slightly above 1967 levels. Two adults were taken in a light trap near Yankton, Yankton County, SOUTH DAKOTA. Western bean cutworm could become a major economic pest of corn in the State.

BLACK CUTWORM (*Agrotis ipsilon*) damaged sorghum in 2 south-central SOUTH DAKOTA counties during May and early June and damage to corn in WISCONSIN ranged 5-10 percent in some central area fields. In IOWA controls were applied to 116,700 acres of cropland. Larvae caused little damage to corn in KANSAS and injury to corn in MARYLAND was light and well below normal.

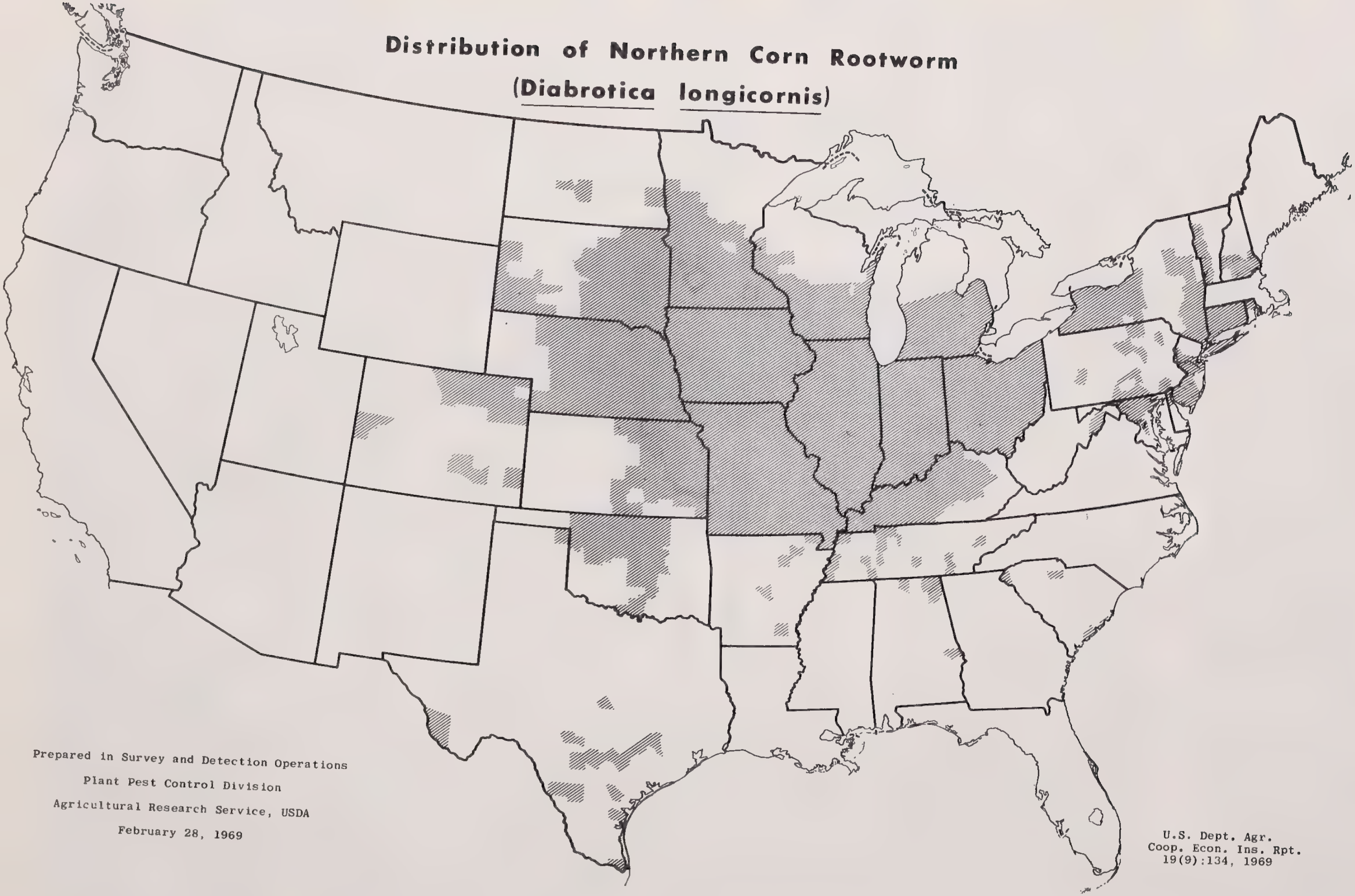
STALK BORER (*Papaipema nebris*) was heavy on ragweed in the eastern third of NEBRASKA. Some larvae migrated to corn from weedy field margins, but few controls were necessary. Parasitism appeared to be very low. Larvae damaged border rows in a few cornfields with infestations ranging up to 25 percent in some of these fields. BEET ARMYWORM (*Spodoptera exigua*) damaged young corn plantings in CALIFORNIA. First instars were light in boots of young sorghum at Glendale, Maricopa County, ARIZONA, during mid-April. In early June controls were necessary on sorghum at Kansas Settlement in Cochise County. VARIEGATED CUTWORM (*Peridroma saucia*) was heavy in north-central TEXAS on May 10 and many thousands of acres were sprayed.

CUTWORMS were very damaging to corn and some milo in CALIFORNIA throughout the 1968 season. These pests caused severe local problems on grain sorghum early in May in central and southern areas of TEXAS, but were light and caused little damage on corn throughout MINNESOTA. W-MARKED CUTWORM (*Spaelotis clandestina*) infested corn in WISCONSIN by late May and required some treatment in the Wood County area. Damage by GLASSY CUTWORM (*Crymodes devastator*) caused the replanting of some early corn in MICHIGAN. DARK-SIDED CUTWORM (*Euxoa messoria*) and *Euxoa detersa* larvae damaged corn seedlings in 2 northeastern counties of NEBRASKA and PALE WESTERN CUTWORM (*Agrotis orthogonia*) larvae damaged corn and sorghum in west-central and southwestern KANSAS in May.

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) larvae in north-central FLORIDA were severe on late-planted field corn in sandy soils. In the Belle Glade area of Palm Beach County, this phycitid moth was moderate on "rattoon" sugarcane (second-year cane) in the muck region of the same area. Lesser cornstalk borer was not very common in OKLAHOMA and caused little damage. In ARIZONA populations ranged moderate to heavy on corn and sorghum in Yuma County from late June through early October; some fields were treated.

WESTERN CORN ROOTWORM (*Diabrotica virgifera*) adults were collected from field corn in Yavapai County, ARIZONA, for a new county record. *D. virgifera* and SOUTHERN CORN ROOTWORM (*D. undecimpunctata howardi*) adults were first observed in southeastern WYOMING in mid-July. The heaviest adult counts averaged 6-10 per plant. Controls were applied for adults and larvae. The southern species was not important. In MONTANA western corn rootworm occurred in Yellowstone and Rosebud Counties. *D. virgifera* adults were light on corn in Richland County, NORTH DAKOTA, on August 23. No new fields or counties have been found infested since the first findings during 1967. *D. undecimpunctata howardi* was reported in a west-central county for a new record. Western corn rootworm and northern corn rootworm infestations in SOUTH DAKOTA were down sharply from those of 1967. Similar to 1967, a late hatch was apparently extended over a long period. Early summer infestations were erratic. By August 9, adults averaged 6 per cornstalk in some fields near Beresford. Western corn rootworm was the dominant species until the last week of August, when northern corn rootworm made up 90 percent of a rootworm population in a field in northern Yankton County. Numbers were at the lowest level of the last 5 years. During fall corn rootworms were heavy enough in the corn-growing area so that problems are expected in 1969. Western corn rootworm was reported for the first time in 2 counties. In southern and southeastern NEBRASKA southern corn rootworm adults were unusually abundant in May and June and common on alfalfa and sweetclover throughout the season, but no damage was noted. In the eastern and northeastern areas the usual numbers of western corn rootworm and northern corn rootworm heavily lodged some fields. Corn rootworms remained active on corn until mid-October in Nebraska. In KANSAS infestations of *D. undecimpunctata howardi*, *D. longicornis*, and *D. virgifera* were about the same as in 1967. Rootworms and drought damaged many fields in the northeastern area; in July and August many fields were treated for adults. In August ratios for the 3 species remained unchanged in the northeastern and north-central areas. New records were reported in a southeastern county for western corn rootworm and in a south-central and 2 north-central counties for *D. longicornis*. Western corn rootworm damaged large acreages of corn in Texas County, OKLAHOMA, during July and early August. In mid-July larvae ranged up to 45 per plant. In early August adults ranged up to 50 per row foot. Southern corn rootworm was medium to heavy

Distribution of Northern Corn Rootworm
(Diabrotica longicornis)



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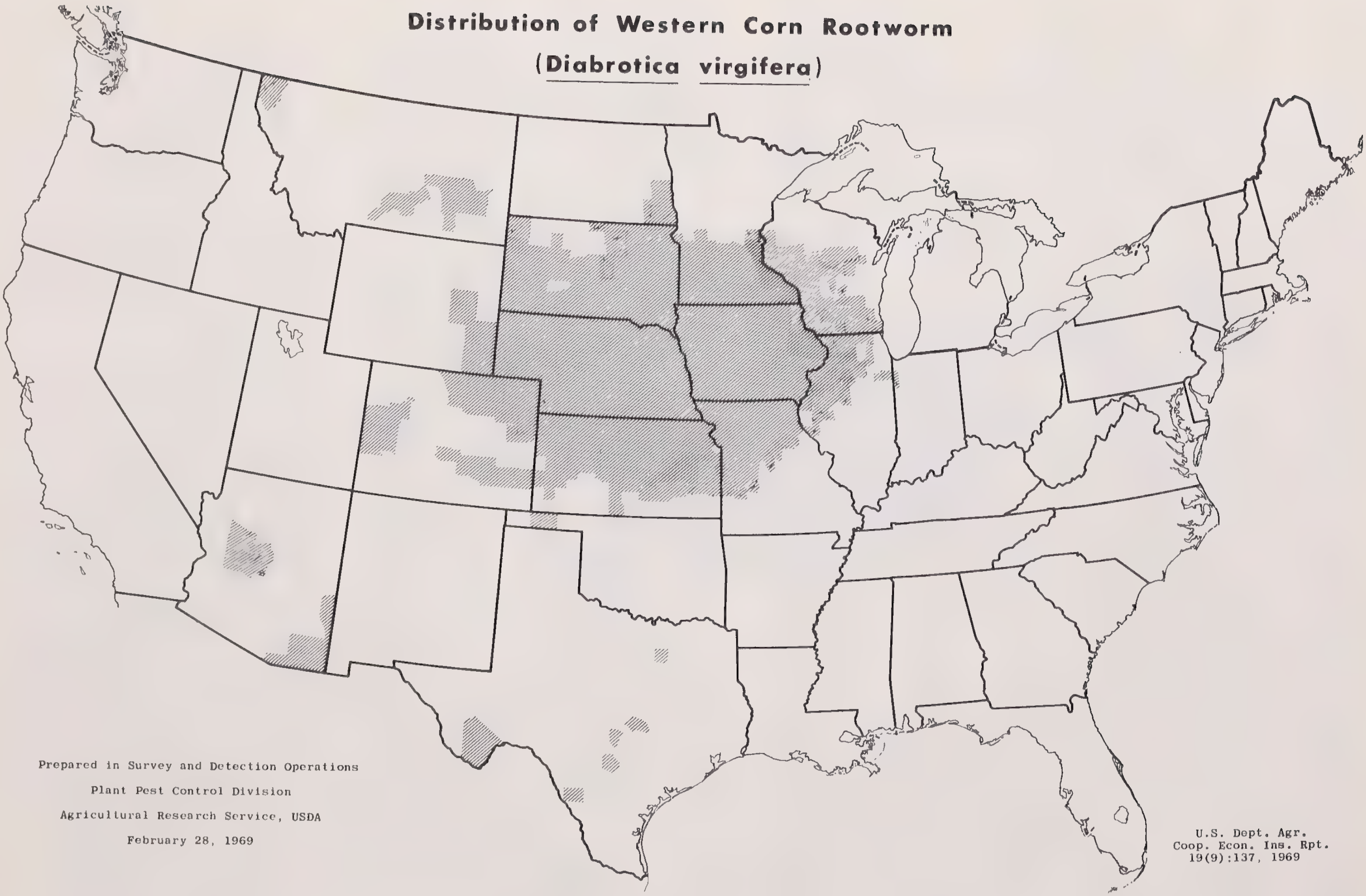
on sorghum in a southeastern county of TEXAS during mid-April and later on corn and sorghum in the east-central area. Northern corn rootworm was first found in 4 ALABAMA counties during 1967 but no new infestations were reported in 1968.

The first western corn rootworm larvae of the season in MISSOURI were reported June 11 from Atchison County. The first adult was seen July 3 in Knox County. This rootworm was the major corn pest in the northern area. Heavy damage occurred in Bates County, much farther south than any previous problems. Western corn rootworm was reported in 4 west-central counties for new records. The first larvae of the season in IOWA were observed during late June. Lodging averaged 6.2 percent, compared with 8.1 percent of the plants in 1967. About 5 million acres of corn in Iowa were treated for corn rootworms. Loss was estimated at $49 million. Northern corn rootworm and western corn rootworm were again a major problem on corn in MINNESOTA. A general hatch began on June 20, about the same time as in 1967. In early July lodged corn was evident. Rainfall helped plants to recover from moderate root damage. In August adults averaged 25,925 per acre in the southeastern district and 23,728 per acre in the southwestern district. Middle averages of 13,000+ per acre occurred in south-central and central Minnesota. Adults averaged 8,714 and 5,377 per acre in the east-central and west-central districts, respectively. Northern corn rootworm continued to be predominant. Western corn rootworm increased in the west-central district. Only 1.5 percent of the adults were found in first-year cornfields. Economic infestations in 1969 will occur in southeastern and southwestern Minnesota. In WISCONSIN root damage was severe in a few untreated fields but light to moderate generally by July 12. By July 26, silk feeding was noticeable. A cool spring, which had prolonged hatch, probably prolonged adult emergence. *Diabrotica longicornis* outnumbered *D. virgifera* by about 50 to 1. Corn rootworm populations in MICHIGAN appeared to decline as they did in 1967. Neither damage nor adults were observed on corn silks.

Corn rootworm larval counts of 30 per corn plant were average for western corn rootworm and common for *D. longicornis* in the northern half of ILLINOIS in late June but were as high as 75 per hill in the western area for *D. longicornis*. By early July *D. longicornis* had severely damaged corn roots. By mid-August, 4 percent of the fields had 5 or more *D. longicornis* adults per plant and 62 percent had 1 or less. Most economic damage by western corn rootworm occurred in the western and northwestern sections. *D. virgifera* was reported in 17 new counties on the perimeter of the generally infested area, bringing the total known infested counties to 37. Southern corn rootworm was heavy in the southern half of Illinois, but damage was isolated. *D. longicornis* counts throughout INDIANA were generally light with little damage. During mid-August adults ranged 15-30 per 25 ears in the most heavily infested fields. One western corn rootworm adult was reported in Newton County for a new State record in Indiana. Corn lodged by *D. longicornis* in OHIO was not a problem. By mid-August adults were near their seasonal peak on corn silks in the central area. During the last half of August adults in 53 major corn-producing counties of Ohio averaged 25,802 per acre with 1.44 per plant, similar to 1967. Averages of more than 50,000 per acre were found in 6 southwestern Ohio counties.

Northern corn rootworm adults continued to increase in PENNSYLVANIA. The highest number was reported from the southeastern corner of the State. Averages as high as 1 adult per 5 plants infested some fields in Bucks and Lehigh Counties. The injury threshold level has not been reached yet in any area. Southern corn rootworm and northern corn rootworm lodged 2-10 percent of the cornstalks in many fields in central MARYLAND. Northern corn rootworm adults were most numerous in Frederick and Carroll Counties. Adults ranged 1-4 per silk in the heavily infested fields of Carroll County. Northern corn rootworm was reported in 3 new counties and is expected to continue its southward and eastward expansion within Maryland. Northern corn rootworm was not economic in NEW HAMPSHIRE. Adults were reported in 4 new counties.

Distribution of Western Corn Rootworm
(*Diabrotica virgifera*)



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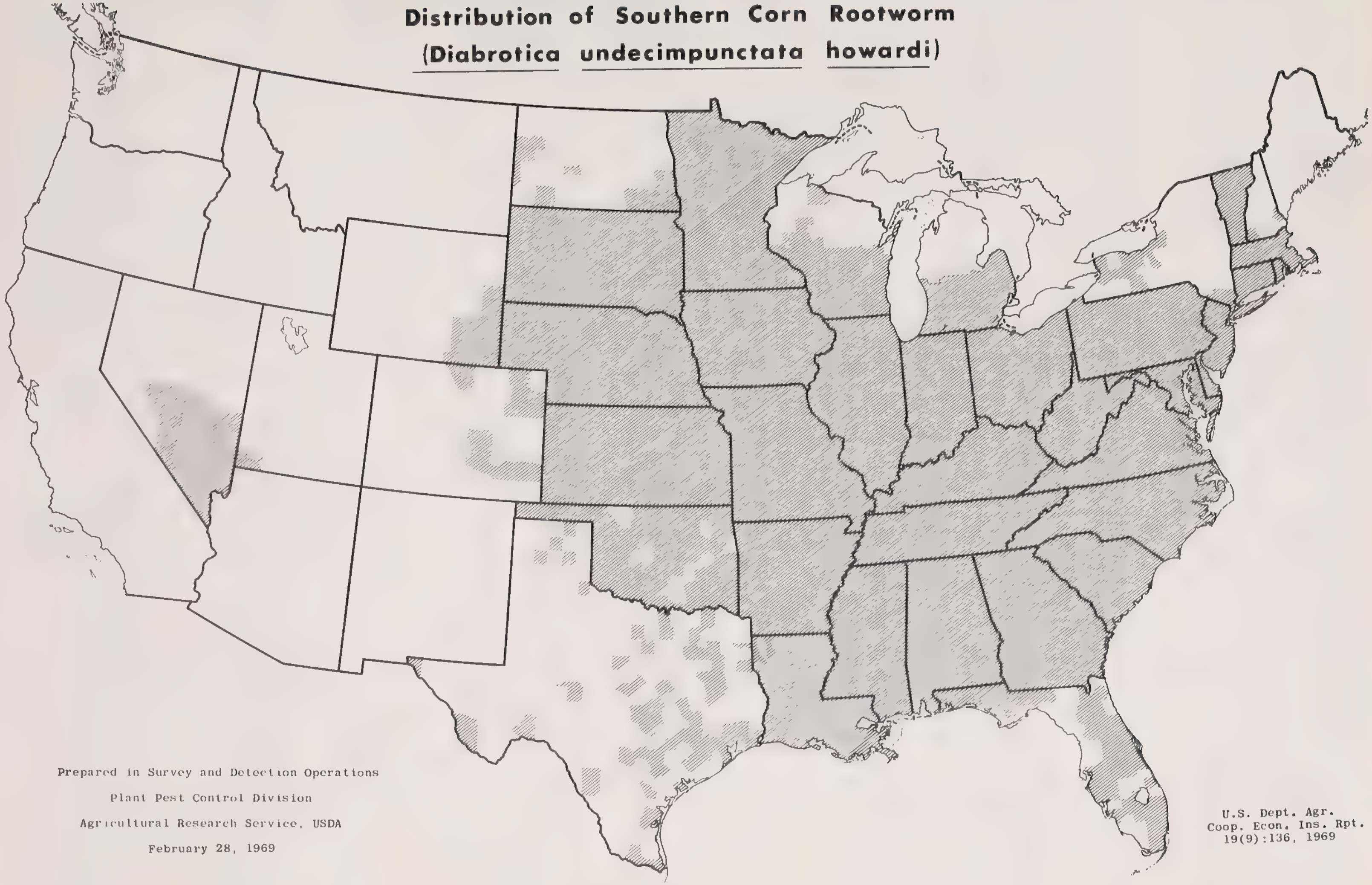
Distribution of Southern Corn Rootworm
(*Diabrotica undecimpunctata howardi*)



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CORN FLEA BEETLE (*Chaetocnema pulicaria*) was very heavy on corn in most of central MARYLAND. Early in the season adults averaged 5 per 12 plants in Frederick County. Populations on the Eastern Shore and in the southern area remained light. Although very few in VIRGINIA, some infestations caused an average of 60-70 percent injury to corn during June. Corn flea beetle adults ranged 1-4 per corn seedling from May 20 through June 7 in southern and central INDIANA. Damage was generally light but a few fields did require controls. Populations in ILLINOIS were highest in the western area; some fields of early corn had 10 per plant. In ALABAMA this flea beetle was largely a pest of seedling corn until plants were 2 feet high. Adults occurred throughout the State.

SEED-CORN BEETLE (*Agonoderus lecontei*) and a GROUND BEETLE (*Clivina impressifrons*) damaged corn seed that germinated slowly due to cool, wet periods during April and May in NEBRASKA. Some replanting was necessary in the State. Adults of both species were taken in light traps in IOWA during early May. Damage by *Clivina impressifrons* was reported from many counties. The loss due to replanting in Iowa was estimated at $20,240. Seed-corn beetle and *C. impressifrons* damaged many cornfields in northern ILLINOIS during germination. Severe infestations resulted in as many as 5,000 corn plants per acre being killed with a probable average loss of 500 to 1,000 plants per acre.

CHINCH BUG (*Blissus leucopterus*) populations were generally lower in NEBRASKA than during 1967. Nymphs moved into corn and sorghum adjacent to ripening small grains in Jefferson County on July 3, but no damage was reported. Overwintered populations were low in most of eastern KANSAS in February. Populations were light in a few central area fields and field borders were treated in a few instances. Chinch bug was not very common in OKLAHOMA and caused little damage. Populations in TEXAS ranged light to heavy on grain sorghum and corn in Lee and Waller Counties from April through June. Chinch bug was lighter than usual in ALABAMA during the 1968 season.

FALSE CHINCH BUG (*Nysius ericae*) was heavy and widespread on grain sorghum in several southwestern counties of TEXAS during July. Controls for this pest were necessary in isolated areas of the Trans-Pecos region of the State. In some northwestern counties this pest ranged medium to very heavy.

SORGHUM MIDGE (*Contarinia sorghicola*) was light on early grain sorghum in the Rio Grande Valley of TEXAS about mid-May. Populations were heavy on this crop in Live Oak, Maverick, Uvalde, Bexar, Wilson, Hays, and Comal Counties. Light numbers were detected in the Rolling Plains, the Trans-Pecos area, the South Plains, and in most central area counties. Yields were not significantly reduced in these areas of Texas except in late-planted grain sorghum. Sorghum midge caused heavy damage to sorghum in Garvin and Custer Counties, OKLAHOMA, but caused no problems on this crop in KANSAS. Sorghum midge required fewer treatments and caused less loss to sorghum in ARKANSAS during 1968 than in 1967. Treatment was required on some early sorghum in the southwestern area in June and July, but late sorghum was not affected. The pest was found in the extreme northeastern area of Arkansas in 1968.

GRASS THRIPS (*Anaphothrips obscurus*) was heavier on field corn in DELAWARE than in previous years. Injury was heavy in Kent and Sussex Counties during late May and early June. This pest averaged up to 50 per corn plant in southeastern PENNSYLVANIA during late June. Populations soon decreased, however, and no serious damage was evident.

BANKS GRASS MITE (*Oligonychus pratensis*) infested lower leaves of field corn in Twin Falls and Lincoln Counties, IDAHO, in early August. Populations on corn in eastern COLORADO required controls and controls were applied to corn in the Mitchell Valley in the panhandle area of NEBRASKA where several fields were damaged. Banks grass mite and other spider mites were medium and widespread on grain sorghum in the lower Rio Grande Valley of TEXAS in mid-August. Light to heavy populations of *O. pratensis* were detected in some southwestern counties during August and some controls were applied in the Trans-Pecos area of Texas.

TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*) was prevalent and damaging to some corn plantings in CALIFORNIA. *Oligonychus* sp. and/or *Tetranychus* sp. populations became noticeable on silage corn in NEVADA in mid-July, built up rapidly in early August, and ranged medium to heavy in August and September in Churchill and Pershing Counties. Treatments were required, but infestations and damage were below those of past years. Light populations of spider mites were first noted on corn in southeastern WYOMING on July 25. Numbers increased until mid-August and then declined. Some controls were applied. In NEBRASKA *Tetranychus* spp. were noneconomic with a few locally serious infestations on corn in northeastern, eastern, and central areas.

GARDEN SYMPHYLAN (*Scutigerella immaculata*) was first reported on field corn in OHIO the second week of May and incidences were reported through July. This pest caused more damage to row crops in the Willamette Valley of OREGON than had been observed the past few years.

GRAY GARDEN SLUG (*Deroceras reticulatum*) damaged corn in Marion County, OREGON. Damage to field corn by *Deroceras* spp. was first reported in central OHIO the third week of May. Damage by these slugs continued severe on young field corn through early July. From mid-June until July slugs were the most prominent and damaging pests of corn in the State. Most damage occurred where sod had been plowed under and where tillage was minimal. Much damage to sweet corn by these pests was reported. Continued damp soil conditions during spring and early summer in Ohio favored heavy slug populations. Slugs were severe in many sod-planted fields of corn in the VIRGINIA highlands and several fields were replanted.

SMALL GRAINS

Highlights:

PALE WESTERN CUTWORM caused severe damage to wheat in several grain-producing States. Fall flights were heavy in southwestern Kansas and the heaviest ever recorded in western Nebraska. A severe outbreak is predicted in 1969 for the southwestern area and southern panhandle counties of Nebraska. ENGLISH GRAIN APHID damaged small grains in Alabama and Texas. SAY STINK BUG was heavy on small grains locally in Nevada and caused moderate damage in western Colorado. WIREWORMS damaged small grains in some areas. GREAT BASIN WIREWORM was more abundant than in many years in Oregon. HESSIAN FLY was moderate in Ohio and infestations were the lowest in 13 years in Illinois and generally lighter than in 1967 in Kansas. BROWN WHEAT MITE was damaging to small grains in Texas, Oklahoma, and Utah and heavy populations developed in western and central Kansas in spring. WINTER GRAIN MITE required some controls in central Texas in early January.

PALE WESTERN CUTWORM (*Agrotis orthogonia*) severely damaged dryland wheat in Texas County, OKLAHOMA, in April and early May. Larvae severely damaged many wheatfields in west-central and southwestern KANSAS in April and May. Several fields were abandoned because of cutworm damage and drought. Thousands of moths were collected in light traps in Finney and Stevens Counties in September and October. Damaging numbers infested wheat in southwestern NEBRASKA as well as southwestern panhandle counties in that State. On April 3-4, half-grown larvae ranged 1-10 per row foot in Dundy, Chase, and Perkins Counties; the heaviest counts, 1-13 per row foot, occurred in the panhandle. Damage continued until the end of May. Fall flights were the largest ever recorded. A severe outbreak is predicted in 1969 for the southwestern tier of counties and the southern panhandle. Larvae damaged winter wheat over extensive areas of SOUTH DAKOTA in the spring and infested grain in Wibaux, Lewis and Clark, Yellowstone, Daniels, Teton, Phillips, Pondera, Valley, Liberty, Judith Basin, and Toole Counties, MONTANA. In WYOMING larvae damaged many wheatfields in the southeastern area during late April and

May. Counts averaged up to 8 per square foot in the more heavily infested fields. Some controls were applied; replanting was required in scattered localities. Injury in UTAH was uncommon.

ENGLISH GRAIN APHID (*Macrosiphum avenae*) occurred in damaging numbers on heads of developing wheat in many fields of Mobile, Baldwin, and other southern ALABAMA counties. This aphid was noneconomic in ARKANSAS but damaged small grains in TEXAS. In OKLAHOMA light numbers (up to 20 per foot) infested wheat from early February to mid-April and during December. Low populations during spring and fall caused no damage in KANSAS. In OHIO English grain aphid did not build up to economic levels on small grains. During May and June, 10-393 per 50 sweeps infested wheat and oats in northwestern and north-central areas. Populations peaked during the first half of June on wheat and oats in central and northern INDIANA; aphids ranged 5-30 per plant. Although populations were noticeably higher than previous years, little damage occurred. Counts in the southern third of ILLINOIS averaged 6.4 per sweep with a high of 50 per sweep in western areas. Damage was not economic. Light numbers caused no damage in IOWA. Migrants entered MINNESOTA in early April. Moderate numbers caused no observed damage to field crops. The principal migration into SOUTH DAKOTA occurred about May 10-12, the same time as in 1967. This aphid was rarely encountered in MONTANA in 1968, compared with the large numbers of 1967. Light numbers infested small grains in UTAH. Light populations were scattered on barley in Mohave and 5 southern counties of ARIZONA from mid-March to mid-April. English grain aphid infested barley and oats at various locations in CALIFORNIA. Overwintering survival in OREGON was very high on cereals, particularly wheat, in the Willamette Valley. In late April alatae began migrating to spring barley. Populations were never high and the incidence of barley yellow dwarf virus was low and very spotted.

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) damaged small grains in TEXAS, but populations were low during spring and fall in KANSAS and caused no damage to grains. Infestations were also light on small grains in UTAH. Another APHID (*Rhopalosiphum padi*) infested small grains in OKLAHOMA from mid-January through April. Populations ranged medium to heavy in many fields in the western two-thirds of the State during the last half of April. Populations were again light on small grains in the western third of Oklahoma in November and December. *R. padi* populations were high (10-20 per root system) on winter wheat infested with *Schizaphis graminum* (greenbug) in eastern Pennington County, SOUTH DAKOTA, during November. *R. padi* populations were very high on winter cereals, particularly wheat, in the Willamette Valley of OREGON. Alatae migrated to spring barley in late April. Populations were not high and the incidence of barley yellow dwarf virus was low and very spotted.

SAY STINK BUG (*Pitedia sayi*) was heavy and localized in NEVADA on barley in Clark County in May and on wheat in Humboldt County in July. Although populations were generally light in UTAH, this pest damaged about 4,000 acres of wheat. Say stink bug and CONCHUELA (*P. ligata*) caused moderate losses to small grains in Mesa County on the Western Slope of COLORADO before controls could be applied.

BARLEY THRIPS (*Limothrips denticornis*) had migrated into early planted barley and entered leaf sheaths by June 14 in NORTH DAKOTA. Numbers were economic in most eastern counties; in the northeastern area 3 or more per plant infested approximately 30 percent of early barley fields. By July 19, up to 20 percent damage appeared.

WIREWORMS caused the usual damage in UTAH. Wireworms, mostly GREAT BASIN WIREWORM (*Ctenicera pruinina*) damaged winter wheat stands in Clearwater, Lewis, and Nez Perce Counties, IDAHO. Great Basin wireworm was more abundant than observed in many years in OREGON and caused significant damage to spring and fall-seeded grains in the Columbia Basin counties. A wireworm probably *Ctenicera* sp. damaged 30 percent of the winter wheat at Uniontown, Whitman County, WASHINGTON, in March. Wireworm infestations in MONTANA damaged much grain in Liberty, Carter, Fallon, Missoula, Choteau, Pondera, Teton, Daniels, Sheridan, and Carbon Counties.

Wireworms were damaging in scattered locations throughout NORTH DAKOTA. Damage ranged as high as 35 percent in some small grain fields. Many fields were replanted. Wireworms damaged small grains in Red Lake, Todd, and eastern Marshall Counties, MINNESOTA. Nearly all problems occurred on soil bank land and on land that had been idle for several years. Reduction of stands ranged from light to heavy.

RICE WATER WEEVIL (Lissorhoptrus oryzophilus) increased in importance and showed some spread in CALIFORNIA. This pest infested all rice-growing areas in ARKANSAS and control was universal and automatic.

HESSIAN FLY (Mayetiola destructor) infested an average of 20.6 percent of the stems in OHIO during July. Loss was estimated at 1,163,580 bushels of wheat. In MICHIGAN it was of minor importance on wheat. Weather and close observation of the Hessian fly free planting date contributed toward holding the pest in check. In INDIANA average infestations by Race B in Monon, Redcoat, Reed, Riley, and Riley 67 wheat varieties were less than in 1967. These wheat varieties had an average infestation of 1.5 percent while the Race B resistant wheat varieties Knox 62 and Benhur had an average infestation of 0.3 percent. Infestations continued to be heaviest in the southwestern district. Hessian fly populations of 2 per 100 tillers were the lowest in ILLINOIS in 13 years except for 1965 when the average was also 2 per 100 tillers. The 1967 count showed 5 per 100 tillers. This pest was generally lighter in 1968 than in 1967 in KANSAS. Resistant wheat varieties in the severely infested areas held populations down. Spring and fall broods caused severe damage only in localized areas. Total loss is placed at about $350,000. Populations in NEBRASKA were generally low statewide. The highest levels were found in the eastern (4.3 percent of stems infested) and south-central (1.9 percent of stems infested) areas. Total crop loss was estimated at 171,050 bushels. In MONTANA light and scattered Hessian fly infestations were reported in 8 counties.

WHEAT STEM MAGGOT (Meromyza americana) damaged small grains in TEXAS. White heads of wheat, oats, barley, and rye were very common throughout MINNESOTA. Highest infestations were found in the central and west-central districts and ranged from 2 to 5 percent.

WHEAT STEM SAWFLY (Cephus cinctus) cut up to 19.8 (average 1.3) percent of the stems in 70 percent of the small grain fields in 19 western counties of NORTH DAKOTA. Cutting was most severe (average 4.6 percent) in McHenry County. Larvae infested wheat in 24 MONTANA counties. Infestations were reported in all northern counties, except Lincoln and Flathead, and in all the most eastern counties. Infestations were also reported in McCone, Dawson, Mineral, Pondera, Teton, Choteau, Golden Valley, Musselshell, Treasure, and Rosebud Counties.

BROWN WHEAT MITE (Petrobia latens) was heavy on dryland wheat in Hansford and Sherman Counties, TEXAS, in mid-April. This pest appeared on small grains in OKLAHOMA in early March and caused some damage in the north-central area in early April and in the northwestern area in early May. Light fall populations were present in the northwestern area in early November. Because of a mild dry spring in KANSAS, heavy brown wheat mite populations built up in many western and central areas in March and April. Mites combined with drought caused much damage in isolated fields. In COLORADO this mite was found in scattered areas and controls were applied. Brown wheat mite damaged several thousand acres of dryland wheat in San Juan County, UTAH. Smaller areas were affected elsewhere in the State. This mite was generally light throughout the season in southeastern WYOMING. In MONTANA, brown wheat mite was noted in Cascade County and infested grains in Liberty and Hill Counties.

WINTER GRAIN MITE (Penthaleus major) damage was heavy in central TEXAS and in Stephens County during early January. Some control was applied in isolated areas. During mid-January cold weather depressed activity in the north-central area. This pest infested small grains in the western two-thirds of OKLAHOMA from mid-January to late April. During late March and early April the heaviest numbers occurred in the southwestern and north-central areas. Light to moderate numbers were noted in southwestern, northwestern, and north-central areas during late November and December. Winter grain mite caused little concern in KANSAS. In CALIFORNIA infestations were reported on wheat in Siskiyou County and on barley in Fresno County.

TURF, PASTURES, RANGELAND

Highlights:

CHINCH BUG was serious on St. Augustine grass lawns in Alabama and SOUTHERN CHINCH BUG was a major problem on this host throughout Florida. TWO-LINED SPITTLEBUG was a problem on Bermuda grass in Alabama and on Pangola grass and St. Augustine grass in Florida. RHODES-GRASS SCALE was a major problem on Tifgreen Bermuda grass in west coast areas of Florida. BILLBUGS and WHITE GRUBS were problems in some areas. BUFFALO GRASS WEBWORM was less damaging generally in Kansas than in 1967. SAGEBRUSH DEFOLIATOR is increasing in southern Idaho. BERMUDAGRASS MITE was more severe in Florida than any time since it was first recognized as a problem 6 years ago.

CHINCH BUG (*Blissus leucopterus*) was a serious pest of St. Augustine grass lawns in central and southern ALABAMA. Due to the damage caused by this pest and the difficulty with controls, many homeowners in the State are replacing St. Augustine grass with other grasses. Chinch bug damaged some lawns in south-central and southeastern OKLAHOMA and was common on turf in RHODE ISLAND.

SOUTHERN CHINCH BUG (*Blissus insularis*) was a major problem on St. Augustine grass lawns throughout FLORIDA. This pest has become a problem on commercially grown St. Augustine grass during the past 2 or 3 years in the muck soil area of southern Florida. Controls are now necessary 2 or 3 times a year. This pest was heavy in central TEXAS late in the year. Activity early in the year was limited by wet weather. Southern chinch bug was taken for the first time on St. Augustine grass in Los Angeles County, CALIFORNIA.

FALSE CHINCH BUG (*Nysius ericae*) built up on mustards, Russian-thistle, and other plants in range areas of UTAH and caused local but minor damage to pastures. This lygaeid bug caused some damage in TEXAS.

TWO-LINED SPITTLEBUG (*Prosapia bicincta*) was present throughout ALABAMA in early spring. Most problems developed on Coastal Bermuda grass in central and southern areas and on lawn grasses in southeastern and southwestern areas of the State. Populations were much lighter than in 1965 and about the same as in 1966 and 1967. Two-lined spittlebug was numerous on pastures of Pangola grass and St. Augustine grass in FLORIDA, primarily in the Everglades area. Damage was less than in 1967, possibly due to heavier rainfall in 1968. Although this spittlebug damaged these grasses from mid-June to mid-September, infestations occurred from April 24 to December 3.

SAY STINK BUG (*Pitedia sayi*) was very heavy on rangeland hosts in northwestern and southeastern NEVADA during April and early May, but heavy infestations did not develop on cultivated crops except in a few areas. Large populations of this stink bug were seldom found on rangeland in UTAH.

YELLOW SUGARCANE APHID (*Sipha flava*) damaged pasture grasses in the Moore Haven, Okeechobee, and Lake Worth areas of FLORIDA in October and November. Unseasonably high populations occurred on experimental plantings of *Chloris* and *Setaria* in the Fort Pierce area in October.

RHODES-GRASS SCALE (Antonina graminis) was a major problem on Tifgreen Bermuda grass in the Sarasota, Bradenton, Palmetto, and Tampa areas of FLORIDA. Populations were heavy on several acres of sod in Broward County in early October. This pest occurred on several varieties of Bermuda grass and on St. Augustine grass in lawns from January to September in the Salt River Valley in Maricopa County, ARIZONA. Rhodes-grass scale infested grass in San Diego County and was reported for the first time in Kern County, CALIFORNIA. Nymphs of a MEALYBUG (Chorizococcus rostellum) occurred inside the sheaths of Bermuda grass in Yuma County, ARIZONA, during mid-February and increased in late March. Populations were moderate at Gila and Roll during mid-May and heavy in September. Controls were applied. Also in Arizona, Heterococcus sp. infested Bermuda grass seed fields on little Arizona Island adjacent to the Colorado River in Yuma County during May and September. Treatments gave excellent control. Another MEALYBUG (Heterococcus pulverarius) caused medium damage to timothy in Lyon County, NEVADA, in June. This was a new State record.

A GROUND PEARL (Margarodes meridionalis) was heavy and damaged Tifgreen Bermuda grass lawns in the Las Cruces area of Dona Ana County, NEW MEXICO. Control was very difficult. All stages of this ground pearl infested Bermuda grass lawns in ARIZONA. The pest was most damaging to the Tifgreen variety used on golf courses in Maricopa and Pima Counties, and was most active from February through September. Also in Arizona, an ARMORED SCALE (Chortinaspis subchortina) that infested St. Augustine grass in Maricopa County in November 1967 was reported as a new State record in 1968.

A CICADA (Platypedia putnami) damaged sagebrush in Cassia, Power, and Bannock Counties, IDAHO, from mid-May to mid-June. Adults oviposited on smaller branches of native juniper south of Pocatello. This cicada also damaged some ornamental plantings. Other cicadas, Platypedia areolata and Okanagana spp., were very abundant on rangeland in Baker, Deschutes, Lake, and Wheeler Counties, OREGON.

A WHITEFLY (Aleurocybotus occiduus) necessitated controls on Bermuda grass seed fields in the Yuma area of Yuma County, ARIZONA.

GRASS THRIPS (Anaphothrips obscurus) populations increased to damaging levels in NEVADA and required controls in Lyon County in May and in Douglas County in June. Chirothrips spp. required treatments on Bermuda grass seed fields in the Yuma and Roll areas of Yuma County, ARIZONA, in May, June, and September.

BILLBUGS (Sphenophorus spp.) were of some concern in 1968. S. chittendeni infested Bahia grass at Ruskin in Hillsborough County, FLORIDA. This billbug severely damaged 2,000 acres of Bahia grass near Arcadia,De Soto County. This problem was closely associated with dry weather. S. venatus vestitus caused less damage to zoysia grass in KANSAS, due partly to control efforts in 1967. S. venatus vestitus infested a golf course in San Bernardino County, CALIFORNIA, for a new State record. It was later found in Los Angeles County for a new county record. S. venatus confluens increased in importance as a pest of orchard grasses, particularly Dactylis glomerata, in the Willamette Valley of OREGON, with heaviest populations in Benton County. Damage was most noticeable in fields 3 years old or older. Adults began feeding in March and by April averaged 2-3 per square yard in test plots. Egg laying began in May and the first pupae were found in early August. Adults emerged by mid-August. In October some late larvae were found infected with a fungus Beauveria sp. BLUEGRASS BILLBUG (S. parvulus) damaged turf and lawns in Salt Lake County, UTAH.

WHITE GRUBS were heavy in several pastures in the Belle Glade area of Palm Beach County, FLORIDA. Large grubs ranged up to 12 per square foot and roots were severely damaged. Phyllophaga spp. larvae continued damaging in MICHIGAN on cultivated lands infested with quackgrass. The worst infestations of the grubs occurred near woodlots containing oaks and other tree hosts preferred by the adults. Damage by Phyllophaga spp. larvae to lawns, golf courses, and pastures was reported more frequently in KANSAS. These pests severely damaged pastures and rangeland in northwestern and north-central counties in NEBRASKA. Unspecified white grubs damaged many home lawns in UTAH, but damage in pastures was scattered. Phyllophaga spp. larvae damaged lawns at 12 scattered locations in MONTANA.

FALL ARMYWORM (Spodoptera frugiperda) was a serious problem on golf greens of Tifgreen Bermuda grass in FLORIDA from March to December. The problem was most serious in the southern part of the State where populations peaked in July and August. Controls were difficult. Fall armyworm was the principal armyworm that damaged turf in northeastern Florida, where many lawns were seriously damaged in late summer.

BUFFALO GRASS WEBWORM (Surratha indentella) larvae caused less damage in most infested areas of KANSAS in 1968. This was partly due to control efforts during 1967. In new areas of infestation, damage by this pest was at least as severe as last year.

BLUEGRASS WEBWORM (Crambus teterrellus) caused more damage in eastern KANSAS than in 1967. Other SOD WEBWORMS (Crambus spp.) damaged lawns in Scotts Bluff, Buffalo, and Washington Counties, NEBRASKA, in mid-April. Population levels in these areas were about the same as last year. Unspecified sod webworms caused minor damage to pastures locally in UTAH. Sod webworms were of some concern in the eastern part of the Nation. Crambus spp. continued to be a problem on turf grasses in FLORIDA. Damage by these pests was scattered in TENNESSEE. Populations were locally heavy in central and eastern areas of the State in June and July. By mid-July, adult flights of Crambus teterrellus, C. trisectus, and C. mutabilis peaked in Knox and Blount Counties. Infestations of unspecified sod webworms in lawns continued to be an increasing problem in DELAWARE, especially in the northern area. Crambus spp. adults were active in RHODE ISLAND by mid-August.

GREAT BASIN TENT CATERPILLAR (Malacosoma fragile) was again very heavy on bitterbrush in Klamath County, OREGON. Larvae damaged over 2,000 acres of bitterbrush on the better range areas in the mountains of Sevier County, UTAH. Also in Utah, FOREST TENT CATERPILLAR (M. disstria) caused spotty damage in northern and central area canyons and mountains.

SAGEBRUSH DEFOLIATOR (Aroga websteri) has been low in IDAHO for the past 3 to 4 years. Moth populations are building up in several southern areas of the State. During 1968 larval populations were sufficiently high to defoliate sagebrush near Kimama in Lincoln County and in the Salmon River Canyon between Challis in Custer County and Salmon in Lemhi County in mid-June. WESTERN TUSSOCK MOTH (Hemerocampa vetusta) caused light to heavy damage on bitterbrush in Douglas, Ormsby, and southern Washoe Counties, NEVADA. Damage was heaviest in Douglas and Washoe Counties. A HESPERIID MOTH (Atalopedes campestris) was heavy in Caldwell and De Witt Counties, TEXAS, during mid-July and caused much damage to grasses.

WESTERN HARVESTER ANT (Pogonomyrmex occidentalis) kept several thousand acres of rangeland bare in UTAH. CRAZY ANT (Paratrechina longicornis) occurred for the first time on Kikuyu grass in San Diego, CALIFORNIA.

BERMUDAGRASS MITE (Aceria neocynodonis) was more severe in FLORIDA than any time since it was recognized as a problem in the State 6 years ago. This mite was a problem statewide in 1968, but was most severe on sandy soils in the southern area and on coarse-bladed varieties of Bermuda grass. Some grass was killed. Controls had to be applied 3 times on some golf courses. Bermudagrass mite was damaging in TEXAS, but was reported only from Tulsa County, OKLAHOMA, in mid-June. This mite extended its range on Bermuda grass in CALIFORNIA.

CLOVER MITE (Bryobia praetiosa) caused problems on many home lawns in UTAH in 1968. BANKS GRASS MITE (Oligonychus pratensis) and BROWN WHEAT MITE (Petrobia latens) were damaging and required controls in Lyon County, NEVADA, in May.

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